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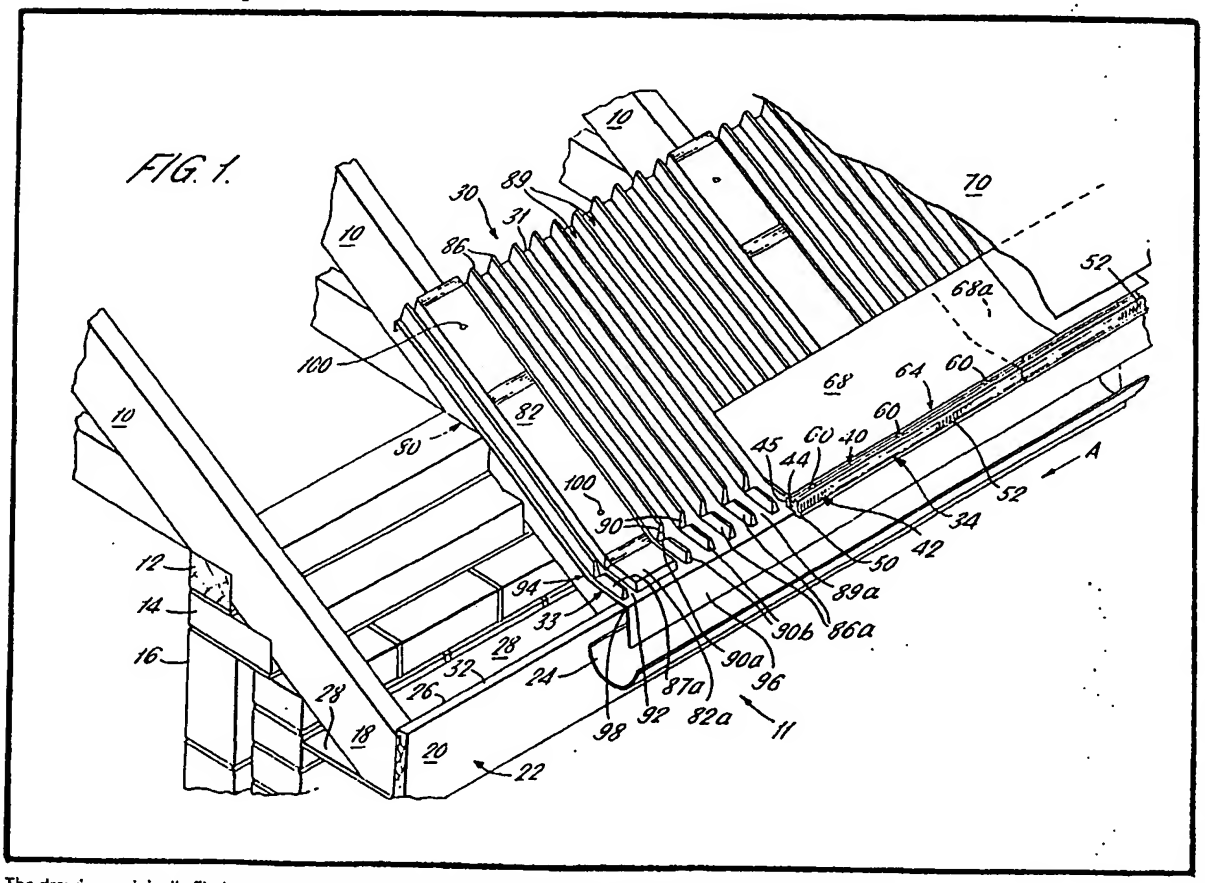
# (54) Improvements in roof ventilation

(57) A ventilated roof assembly comprises a fascia board 20 attached to the ends of rafters 10 and roofing tiles laid on the rafters. A ventilator 34 comprising an elongate member having a row of apertures fixed to the upper edge of the fascia board to provide ventilation to the roof space. A fluted moulded plastics tray 30 may be fitted over the rafters and under the ventilator and tiles to provide air flow passages from the ventilator apertures up into the roof space clear of any insulating material in the roof space. The ventilator may also be used in situations where the fascia board is attached directly to the wall of the building on which the roof is supported.

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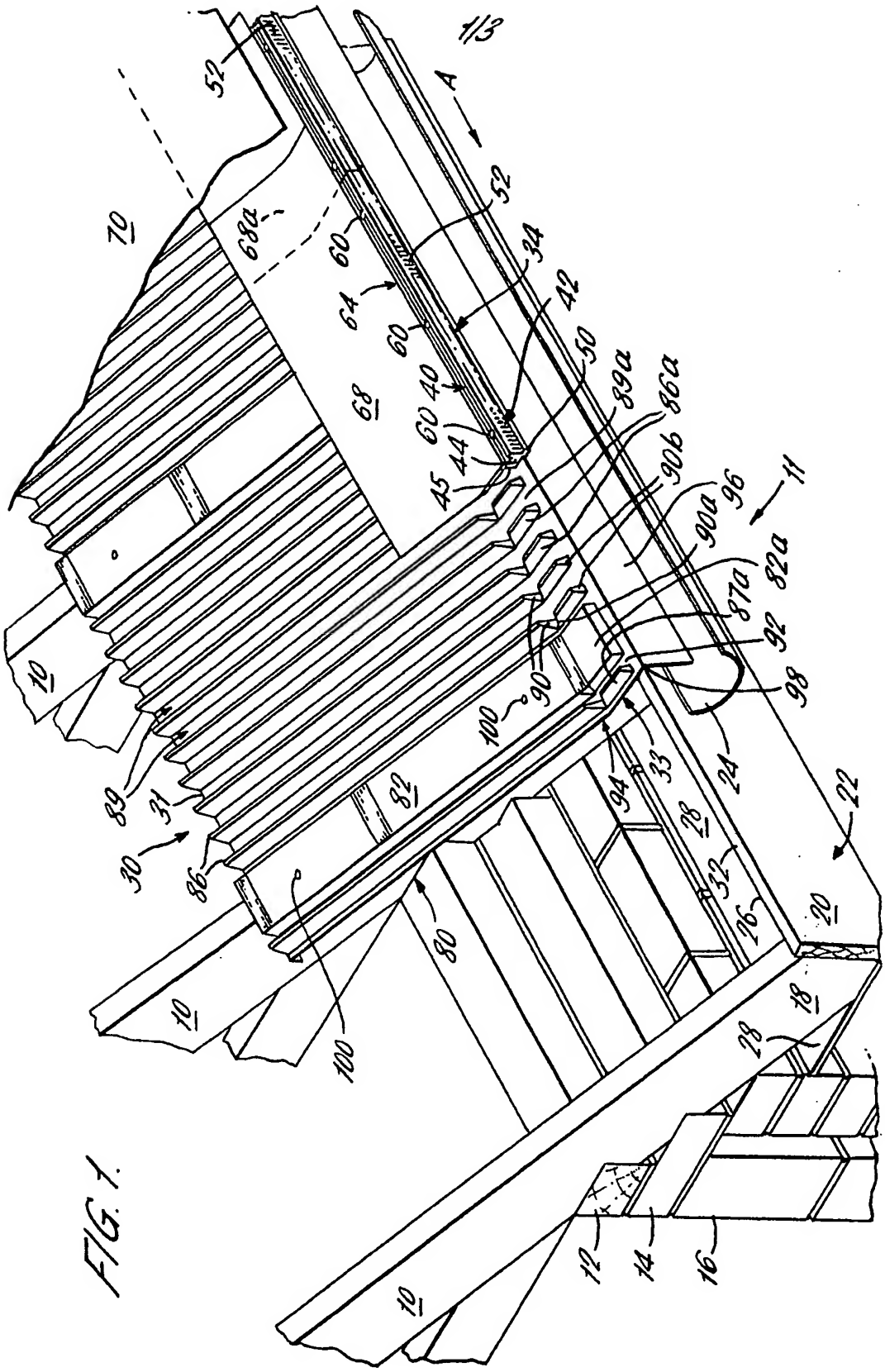
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FIG. 1.

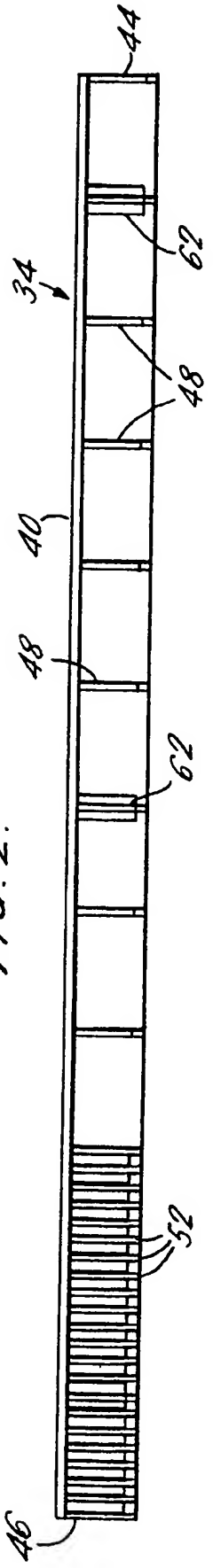


FIG. 2.

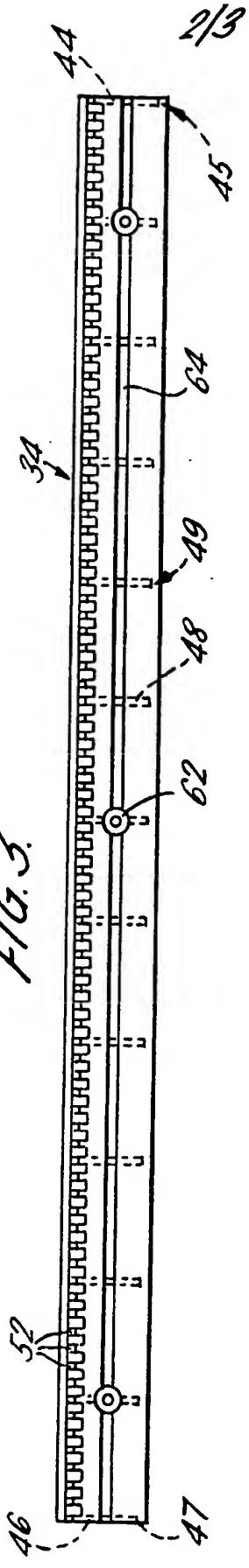


FIG. 3.

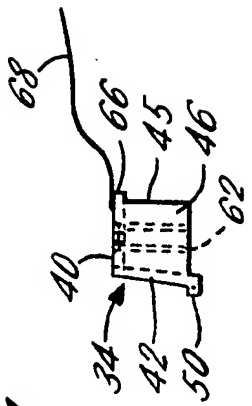


FIG. 4.

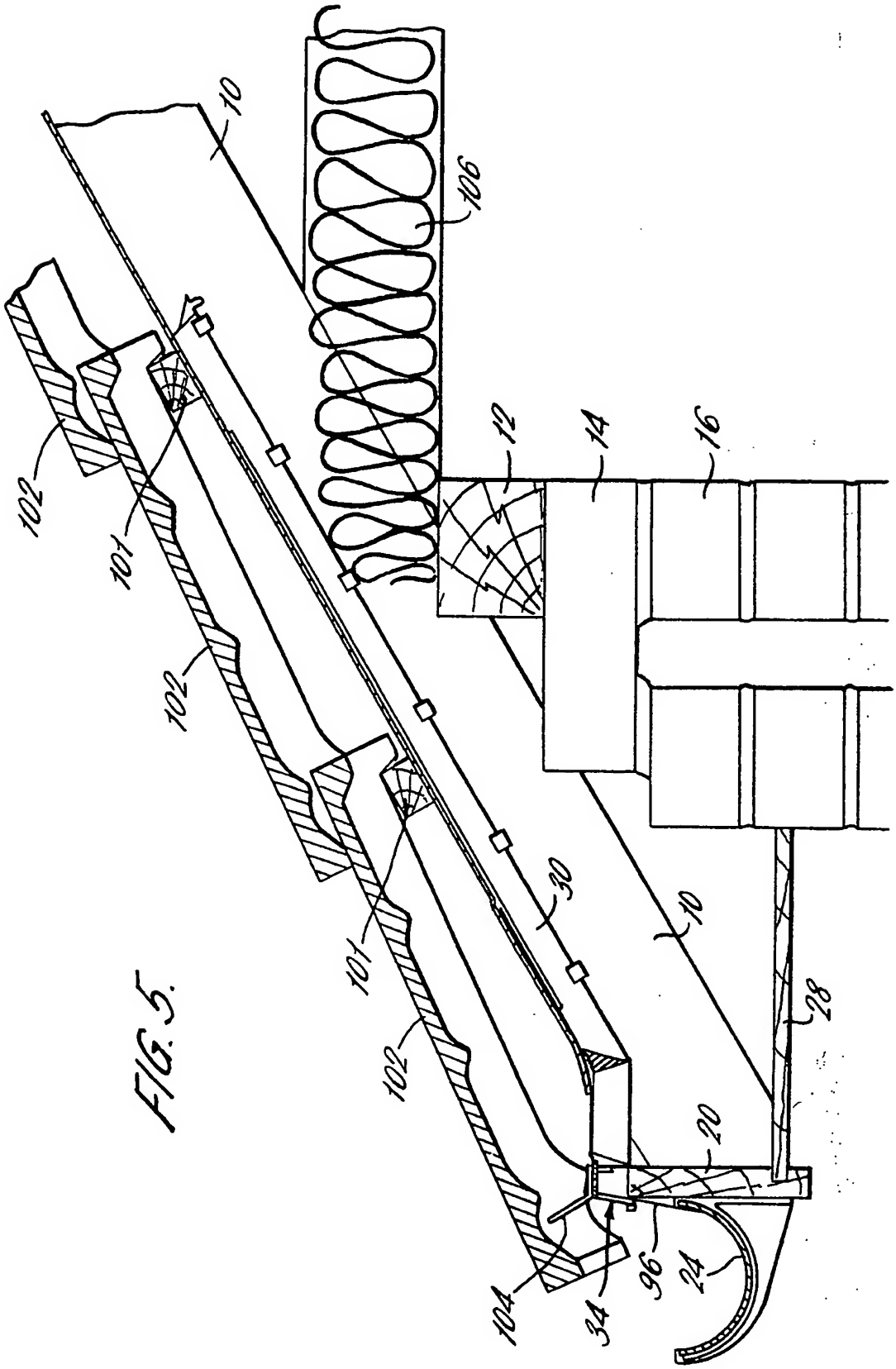


FIG. 5.

SPECIFICATION

**Improvements in roof ventilation**

This invention is concerned with improvements in the ventilation of roofs and eaves ventilators for roof structures.

With the advent or more stringent regulations governing the construction of dwelling places, and particularly those constructions having a tiled roof enclosing an attic roof space, it has become necessary to ensure that the roof space is adequately ventilated thereby avoiding the build up of condensation to an amount where the internal structure of the roof is affected.

It has been one of the aims of building component manufacturers to produce a ventilator which would satisfy the stringent building regulations and to this end there are manyfold variations of ventilators for securing ventilation of roof spaces; however, the performance of a great deal of these items still leaves something to be desired. For example, most of the eaves ventilators available at this time are aimed at securing ingress of ventilating air via appropriate apertures in a soffit or fascia board of a conventional eave assembly with the ventilator unit maintaining a gap between the felt on the roof and any loft insulation material. Thus, an adequate flow of airflow may be achieved.

None of the proposed systems of eave ventilator is capable of securing ventilation of eaves which do not comprise a soffit and fascia board assembly. This fact will be particularly observed in older types of dwellings where the fascia board, or its equivalent component, is secured direct to the outer wall of the dwelling and there is no way of enabling the ingress of ventilating air therethrough.

The present invention provides a ventilated roof assembly comprising a fascia board, a roof structure including a plurality of roofing tiles at least partially overlying the fascia board, and a ventilator for ventilating the roof space beneath the roofing tiles, in which the ventilator comprising at least one elongate member extending along an upper edge of the fascia board and secured thereto, the member or members defining air flow passages between the fascia board and the roofing tiles.

The present invention thus provides an eaves ventilator which in use is secured to the top of a fascia board or the like element to enable, when the ventilator is in use on a dwelling, the ingress of ventilating air to the attic space of the dwelling.

Preferably the ventilator member comprises a plurality of apertures or perforations defining the air flow passages.

The ventilator may extend along the entire upper edge of the fascia board. Preferably the elongate member is secured to the fascia board by fasteners passing through the elongate member in to the upper edge of the fascia board.

Preferably the ventilator includes a slot or hole for receiving fasteners for securing the ventilator to the fascia and for other eave fittings for the roof. The fasteners are preferably nails.

Conveniently the eaves ventilation apertures are provided by a grill-like series of openings which are of sufficient size and spacing to facilitate adequate ventilation, when in use, while being small enough to prevent the ingress of extraneous matter or large insects.

The roof assembly also conveniently comprises an air ducting device which in use is located between the rafters of a dwelling to duct the incoming air from the eaves ventilator into the attic space of the dwelling.

Conveniently the ducting device may comprise a tray-like moulding with a first portion having at least one rafter engaging portion and a fluted portion the flutes of which, when the moulding is in use, extend parallel to the rafters of a dwelling to facilitate ease of ducting the ventilating air thereby. Preferably the moulding comprises a contiguous second portion which in use extends outwardly of the first portion from a lower end thereof to engage the fascia board of a dwelling and seal a gap between the fascia board and the first portion. Preferably the second portion of the moulding comprises rafter engaging and fluted portions similar to those of the first portion.

Conveniently the second portion of the moulding, in use, is secured to the top of the fascia board between the eaves ventilator and the fascia board.

Conveniently the first and second portions of the moulding may comprise second fluted portions on a side of the rafter engaging portion remote from the flutes of the fluted portions of the first and second portions respectively whereby, when the moulding is in use on a roof, such second fluted portions may conveniently be engaged and interlocked with portions of the fluted portions of a next laid moulding.

Preferably the moulding is made from plastics material although any other suitable material may conveniently be utilised.

Preferably the ventilator comprises at least one elongate member of box like cross-section having apertures or perforations therein. The ventilator may comprise an inverted L-shape moulding strengthened by transverse wall portions, the apertures being provided in one face of the moulding and the other face being adapted to receive fasteners for securing the ventilator to the fascia.

Preferably the ventilator further comprises a flexible membrane fixed to an upper surface of the moulding and extending up the roof partially to overlie rafters of the roof assembly.

There now follows by way of example a detailed description of a roof structure according to the invention which description is to be read with reference to the accompanying drawings.

In the accompanying drawings:—

Figure 1 is a perspective view, with parts broken away for clarity, of a roof assembly provided by the invention.

Figure 2 is a rear view of the eaves ventilator of Figure 1;

Figure 3 is a plan view of an eaves ventilator;

Figure 4 is a side view of an eaves ventilator with a flexible membrane attached thereto; and

Figure 5 is a schematic section through part of the assembly of Figure 1 generally in the direction of the arrow A.

Eaves ventilators proposed hitherto have not met all the requirements of eaves construction insofar that no known proposal exists for adequately ventilating the attic space of a dwelling which does not have conventional soffit and fascia board assembly. Older type dwellings, particularly terraced dwellings, have fascia boards, or the like, fixed directly to the outer wall of the dwelling. It will readily be appreciated, therefore, that eaves ventilation devices which rely on the provision of apertures in the soffit and/or fascia board for facilitating the ingress of ventilating air to the attic space, cannot be utilised where a) there is no soffit, and b) no apertures can be provided in the wall mounted fascia board.

The roof assembly of this invention, see Figure 1, overcomes or mitigates these drawbacks.

The eaves ventilator assembly, which may be utilised on either a roof with or without a soffit as aforesaid, is described herein in relation to its use on a roof of a buildling comprising a soffit at the eaves thereof. Thus, see Figure 1, the assembly is used in a roof having spaced rafters 10 supported at the eaves 11, in known manner, on a wall plate 12. The plate 12 is in fact supported by a stretcher oriented brick 14 located at the top of a conventional brick cavity wall 16.

At their lower ends 18 the rafters 10 have rigidly afixed thereto a conventional facia board which extends along the width of the dwelling.

Supported on an outwardly facing surface 22 of the fascia board 20, in known manner, is a gutter 24 and supported between an inwardly facing surface 26 of the fascia board 20 and an outer surface of the cavity wall 16 is a soffit 28.

The ventilator assembly comprises a flexible moulded tray 30 of plastics material which in use is effective to provide a ducting means 31 for air between the rafters 10 and also overlie an upper edge 32 of the facia board 20 to provide a closure means 33 to be fully described hereinafter.

A ventilator 34 of the assembly is arranged along the upper edge 32 of the fascia board and is effective, in use, to allow the ingress of ventilating air to the ducting means whereby the roof space of the attic is ventilated.

The ventilator 34, see particularly Figures 1 to 4, is an elongate plastics moulding of generally inverted "L" shape in cross section, see Figure 4. The ventilator thus comprises an upper wall 40 and a front wall 42 formed contiguous one with the other and the length of the ventilator may be variable although for production purposes it is obviously advantageous to have a unit length and that shown in the drawings has a length of 500mm. The ventilator is closed at each end by end walls 44 and 46 and is reinforced along its length by internal walls 48 provided at spaced intervals. The end walls 44 and 46 and the walls 48 are shorter than the front wall 42 of the ventilator thereby providing, see Figures 1 and 4 a thickened step portion 50 which enables the ventilator to be positioned overlying the upper edge of the fascia board with the step portion 50 depending over the outwardly facing surface 22 of the board 20.

The ventilator 34, see Figures 1, 2 and 3 is provided with a series of apertures 52 which extend through the wall 42 and are of adequate size and spacing to allow the ingress of sufficient ventilating air while being small enough to prevent the ingress of extraneous matter and large insects. Thus it will be appreciated that with a row of such ventilators 34 located along a roof eaves 11 as aforesaid, there will be a continuous series of apertures 52 extending the width of the dwelling. It will also be appreciated that the spaces at the lower end of the apertures 52 behind the step portion 50 allows ingress of any water which may seep through the ventilator.

The ventilators 34 are fixedly mounted on the fascia board 20 by nail fasteners 60 which pass through apertured bosses 62 supported from the underside of the upper wall 40 of the ventilator 34. There are three such fastening locations in each ventilator unit, see Figure 1, 2 and 3. Aligned with the apertured bosses 62, the upper wall is provided with a longitudinal slot 64 for receiving and retaining location pins or fasteners of eaves filler units, not shown, of conventional design. Such filler units will close the gap between the ventilator and any contoured roof tiles located thereabove, and may be nailed through the ventilator or be a snap-fit in the slot 64.

Secured to an inwardly extending end 66 of the upper wall 40 of the ventilator 34, see Figures 1 and 4, is a flexible membrane 68. The membrane 68 extends for some 200mm to overlie the rafters 10 of the roof as shown in Figure 1. The membrane 68 has a portion 68*a* which extends to the right thereof, see Figure 1, thereby providing an overlap with the membrane 68 of a prior laid ventilator 34. The membrane is in turn overlaid by a conventional roof felt 70. The membrane 58 acts as a bar to the ingress of foreign bodies, insects, etc. and also directs any moisture downwardly towards the gutter 24.

The flexible moulded tray 30 of the ventilator assembly, see Figure 1, is formed by pressing a single piece of a thin section plastics material between appropriate heated dies. However, the moulding may be made from any suitable material.

The moulding 30 comprises a first portion 80 which is generally tray like in configuration and comprises a rafter engaging inverted trough portion 82 at the left hand side thereof, see Figure 1. To the right of the trough portion 82, see Figures 1, the moulding 30 is provided with a series, viz 10, of inverted flutes 86 which are substantially co-planar with the trough portion 82. The flutes 86 provide body and strength to the first portion of the moulding as well as the

ducting means 31 mentioned herein before which means 31 is constituted by the channels 89 between the flutes 86.

Laterally of the left hand end of the trough portion 82 is a single inverted flute 87 which in use is adapted to be engaged by the extreme right hand flute 86, see Figure 1, of an interengaging moulding 30.

The flutes 86 and 87 are provided with bulbous projections (not shown) to ensure positive interengagement of the flutes of one moulding with those of another such moulding when they are placed in juxtaposed relationship on a roof of a dwelling.

The flutes 86, and 87 are terminated at their lower ends in a tapered wall 90 which allows for the variable pitch of roofs with which the moulding may be used.

The moulding 30 also comprises a second portion 92 which extends from a lower end 94 of the first portion so to overlie, in use, the upper edge 32 of the fascia board 20, see Figure 1. The second portion 92, similarly to the first portion 80, also comprises an inverted trough portion 82*a* coextensive with the trough portion 82, and flutes 86*a* and 87*a* coextensive with the flutes 86 and 87 respectively. Like the flutes 86 and 87, the flutes 86*a* and 87*a* are also provided with mutually engaging bulbous projections (not shown) to ensure positive interengagement of the flutes of one moulding with the flutes of another when the mouldings are placed in operative positions on a roof.

The flutes 86*a* and 87*a* terminate at their upper and lower ends in tapered walls 90*a* and *b* respectively. The end faces 45, 47 and 49 of the walls 44, 46 and 48 respectively are juxtaposed against the tapered walls 90*b* when the assembly is placed on a roof.

The flutes 86*a* and 87*a* provide body and strength to the second portion 92 of the moulding as well as primary ducting means constituted by the channels 89*a* between the flutes 86*a*, see Figure 1.

The moulding 30 further comprises a third skirt portion 96 which extends downwardly from a lower end 98 of the second portion to act as a drip tray when the moulding is in use, water and other extraneous matter being directed by the portion 96 into the gutter 24, see Figure 1.

Between the first and second portion 80 and 92 the moulding 30 is provided with a concertina action in the area of the joint of the coextensive trough portions 82 and 82*a*, see Figure 1. This enables ease of assembly of the moulding on a roof of various pitches between the normally accepted limits for roofs covered with concrete roof tiles, i.e. between angles of 17.5° and 70°.

When the novel ventilator assembly provided by this invention is to be utilised the sequence of installation operations are as follows:—

1. An operative procurs a moulding 30 and places it at the right hand end of an eaves structure with the trough portions 82 and 82*a* thereof overlying a rafter 10 and the second and third portions 92 and 96 overlying the upper edge 32 of the fascia board 20, see Figure 1.

This moulding at the right hand end of the roof may be a special cut from a whole moulding because it may only need to be provided to ensure location of the right hand end flutes 86 and 87 of a next laid moulding 30, see explanation hereinafter.

2. The operative secures the moulding to the rafters using felt nails 100, see Figure 1.

3. The operative secures successive moulding 30 to the remaining rafters in a similar manner with the extreme right hand end flutes 86 and 86*a* thereof overlying the flutes 87 and 87*a* of the preceding moulding 30 with their bulbous portions in interlocking engagement as hereinbefore described.

4. The operative next secures the ventilators 34 in position by arranging them overlying the second and third portions of the moulding 30, see Figure 1, and securing them to the fascia board by the fasteners 60 which pass through the moulding 30. Thus, the ventilators 34 and mouldings 30 are fixedly secured to the eaves structure, the flexible membranes being arranged so that they lie true on top of the mouldings 30 with their portions 68*a* in overlapping engagement with the left hand end of the previously laid membrane 68, see Figure 1.

5. The operative then secures the roofing felt 70 in known manner.

6. The operative thereafter secures appropriate eaves closure members 104 into the slots 64 of the ventilators and, after battening the roof in the normal way with battens 101 nailed through the trays 30 where necessary he proceeds with the filling of the roof by hanging tiles 102.

It will be appreciated from the foregoing that a roof provided with a ventilator assembly of this invention will be ventilated to acceptable standards and that filling the lower portion of an attic space with insulation material 106 (see Figure 5) will not have any deleterious effect because the mouldings 30 ensure that the ventilator 34 is not blocked by the insulation and that adequate spacing is preserved between the roofing felt and the insulation material to effect the required ducting of ventilating air from the ventilators 34.

It will be appreciated that the ventilator assembly disclosed herein can readily be utilised on a dwelling where the eave does not have a soffit and the fascia board is fixed directly to the outer wall of the dwelling.

It will also be further realised that the ventilator assembly of the present invention is capable of being adapted to suit a roof irrespective of the pitch of the rafters thereof. To accommodate various rafter pitches the moulding 30 is capable of being split longitudinally between any of its flutes 86 to give the desired width of component.

In traditional roof structures there are provided "Sprockets" or "anti-ponding" devices which support the roof felt between and on the rafters adjacent the eaves thereby avoiding sagging of

the felt and creation of a superflous water catchment area. In the arrangement provided by the present invention no such problems are created and the need for specific "sprockets" or "anti-ponding" devices is obviated by the combination of moulding 30 and the membrane 68 of the ventilator 34.

The other advantages which are realised from the use of the ventilator and assembly of the present invention are:—

(i) the prevention of cold areas in the soffit portion of a roof having such a feature;

(ii) application to almost any kind of roof structure either when building a new dwelling or re-roofing an old dwelling;

(iii) the lack of a requirement to form any holes or apertures in the existing soffit and/or fascia board of a dwelling; and,

(iv) the avoidance of blockage of the existing air ducts by subsequent cavity wall or loft insulation.

Modification to the components described herein are also envisaged within the scope of the invention.

**Claims**

1. A ventilated roof assembly, comprising a fascia board, a roof structure including a plurality of roofing tiles at least partially overlying the fascia board, and a ventilator for ventilating the roof space beneath the roofing tiles, in which the ventilator comprising at least one elongate member extending along an upper edge of the fascia board and secured thereto, the member or members defining air flow passages between the fasica board and the roofing tiles.

2. A roof assembly as claimed in claim 1 in which the ventilator member comprises a plurality of apertures of perforations defining the air flow passages.

3. A roof assembly as claimed in claim 1 or claim 2 in whlch the ventilator extends along the entire upper edge of the fascia board.

4. A roof assembly as claimed in any one of the preceding claims in which the elongate member is secured to the fascia board by fasteners passing through the elongate member into the upper edge of the fascia board.

5. A roof assembly as claimed in any one of the preceding claims in which the ventilator includes a slot or hole for receiving fasteners for securing the ventilator to the fascia and for other eave fittings for the roof.

6. A roof assembly as claimed in claim 4 or claim 5 in which the fasteners are nails.

7. A roof assembly as claimed in any one of the preceding claims further comprising an air ducting device located between the rafters of the roof and arranged to duct air from the ventilator into the roof space.

8. A roof assembly as claimed in claim 7 in which the ducting device comprises a moulded tray including at least one rafter engaging portion.

9. A roof assembly as claimed in claim 8 in which the tray further comprises a fluted portion defining ducts extending generally parallel to the rafters.

10. A roof assembly as claimed in claim 8 or claim 9 in which the moulded tray includes a skirt portion extending over the fascia between the fascia and the ventilator.

11. A roof assembly as claimed in any one of the preceding claims in which the ventilator comprises at least one elongate member of box like cross-section having apertures or perforations therein.

12. A roof assembly as claimed in claim 11 in which the ventilator comprises an inverted L-shape moulding strengthened by transverse wall portions, the apertures being provided in one face of the moulding and the other face being adapted to receive fasteners for securing the ventilator to the fascia.

13. A roof assembly as claimed in claim 11 or claim 12 in which the ventilator further comprises a flexible membrane fixed to an upper surface of the moulding and extending up the roof partially to overlie rafters of the roof assembly.

14. A roof assembly substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

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